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The effect of longevity drift and investment volatility on income sufficiency in retirement

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Background

- Until last year, the majority of people in the UK (around 75%) bought an annuity at retirement with their pension pot, guaranteeing an income, in either nominal or real terms, removing investment and longevity risk.
- In 2014, the Government announced radical proposals which now allow people to withdraw money from their pension pot from age 55 (rising to 57 in 2028), ‘how they want, subject to their marginal rate of income tax in that year’
- The main effect of this change will be to put more onus on the individual to make sure they have sufficient resources to last for their retirement
- Will individuals be able to manage this risk?

Key considerations

- From an individual standpoint, there are three key consider when deciding on a strategy to manage their pension pots:

1. The risk of living longer than expected and running out of cash, and hence whether to manage this risk by buying an annuity at some point during retirement;
2. Any gift or bequest motive or plans for a major purchase that may affect the rate of drawdown or investment strategy; and
3. The desired expected level and volatility of investment returns in the absence of annuitisation including potential tax liabilities.

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Assumptions

- Unless otherwise noted we are assuming a person who faces average mortality rates for their gender and who has a pension pot of £100,000 at 65 when they retire
- The reasons for this are:
  - While people could retire with the pot at 55, a retirement age of 65 seems appropriate at the moment
  - For people with very small pension pots, spending the money upfront is often the best way rather than having a negligible income
  - For people with large pots, the risk of running out of money is less likely
  - If we consider impaired lives in our examples then it is hard to determine the annuity rates these lives would get

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Assumptions

- All incomes are expressed in real terms though calculations assumes that all incomes are increasing by price inflation during retirement

- We represent the investment returns that could be achieved by the investor with a series of independent and identically distributed log-Normal random variables, as is standard practice for this type of calculation. We are assuming an expected investment return of 3% per annum (in real terms i.e. in excess of price inflation) and volatility of 6% per annum

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The problem with life expectancy

- A male aged 65 is currently expected to live (with no mortality improvements) for another 19.1 years i.e. die at age 84.1
- If they make it to 80 then their expected life is now 8.8 years i.e. they are expected to die at age 88.8 i.e. an additional 4.7 years

- However, using current assumptions about the improvements in mortality rates a male aged 65 is actually expected to live for another 21.9 years
- And if they make it to 80 and mortality rates improve as predicted then their expected life would be 11.4 years

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Main options at retirement

Option	Instant and flexible access to whole pot	Avoid higher rate tax implications	Gift or bequest opportunity	No danger of money running low	Avoid Inheritance tax implications
(A) Withdraw all	✓	✗	✓	✗	✗
(B) Drawdown	✓	✓	✓	✗	✓
(C) Annuitise	✗	✓	✗	✓	✓

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Individual circumstances

- Health – poor health may lead to an individual spending all their pot in one go or buying an impaired annuity

- Home ownership – if individuals own their home outright, then this can be considered as an asset that can be turned into cash or an annuity if their pot is exhausted

- Bequest motive – whether a person wishes to either gift money when they first access their pension pot or to have some money to bequeath on death to a surviving partner, relative, friend or organisation

- These circumstances can change over time

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Person type	In poor health	Home owner	Bequest motive	Option (A)	Option (B)	Option (C)
1						✓
2	Y				✓	✓
3		Y			✓	
4			Y	✓		✓
5	Y	Y			✓	
6	Y		Y	✓		✓
7		Y	Y	✓	✓	
8	Y	Y	Y	✓	✓	

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Additional individual circumstances

- A person with income from a defined benefit pension scheme can take more investment risk with their pension pot
- It will usually be better to withdraw small pension pots in full
- Those with very large pension pots have the most flexibility and may be more influenced by their tax position
- For a person working beyond normal pension age, it is likely they will defer taking no income at all or very little income
- In couple households in which income is pooled, managing tax will be important

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Annuity

- We can assume that the life could take their fund of £100,000 and buy an inflation linked annuity

- We will assume that in the pricing of this annuity that the life assurance company is using unisex mortality rates based on an equal number of males and females and is pricing assuming that they will get a real return of 0%

- This would give an annuity of £4328.82

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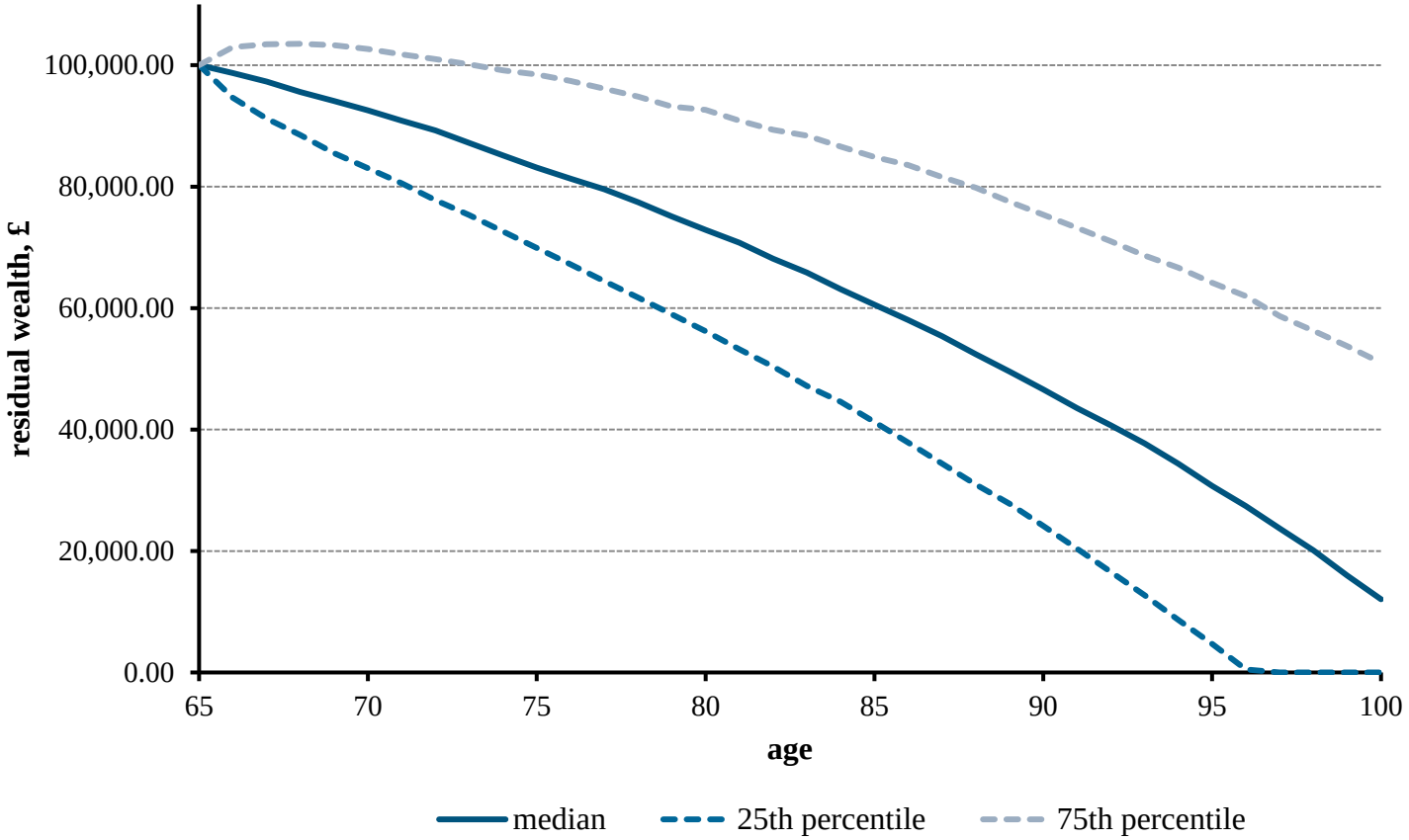
Fixed Income Drawdown - £4,328.82



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Fixed Income Drawdown - £4,328.82

age, *x*	probability of surviving from age 65 to age *x*, ${}_{x-65}p_{65}$			
	male (with drift)	male (without drift)	female (with drift)	female (without drift)
75	0.85876	0.83089	0.90156	0.88437
80	0.74842	0.68609	0.81847	0.77596
85	0.60186	0.49275	0.69738	0.60972
90	0.42281	0.27038	0.53169	0.38566
95	0.24165	0.09741	0.33624	0.16797
100	0.10149	0.01887	0.16161	0.04156

$x_{x-65}p_{65}$

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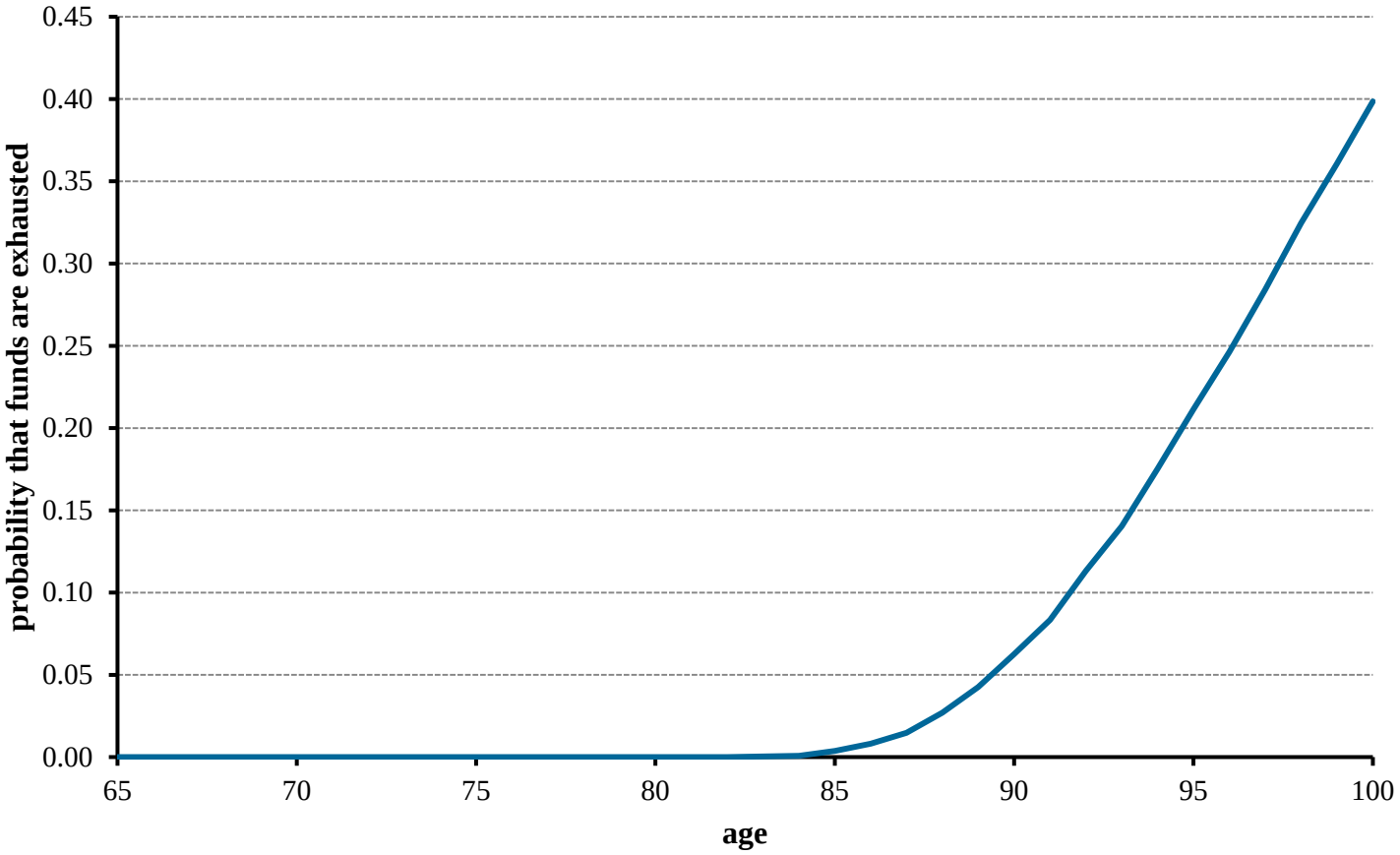
Fixed Income Drawdown - £4,328.82



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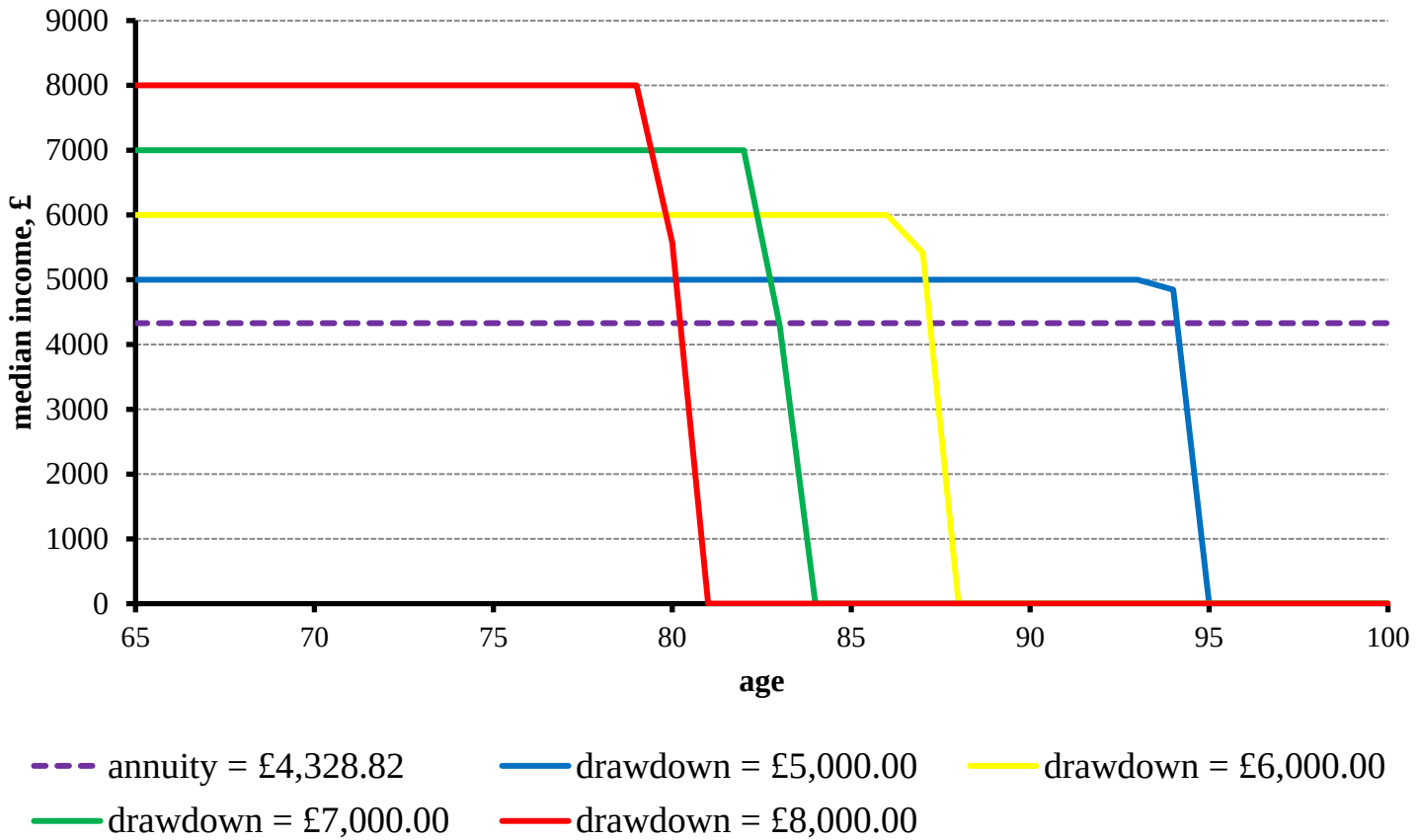
Fixed Income Drawdown – Different Amounts



Flexible income drawdown

- We can make the income taken each year a function of the pension pot and the expected future lifetime.
- At 65 the initial pension pot of £100,000, the individual can draw down an annual income of

$$\frac{100,000}{21.8955} = £4,567.15$$

- For simplicity, suppose now that the actual investment return achieved during the year of age 65 to 66 is exactly in line with expectations, the remaining fund at age 66 will be

$$£100,000 \times 1.03 - £4,567.15 = £98,432.85$$

Flexible income drawdown

- Then, based on the future life expectancy at age 66 of 21.1247 years, the individual will now be able to draw down an annual in the coming year of:

$$\frac{98,432.85}{21.1247} = £4,659.61$$

- And so on…

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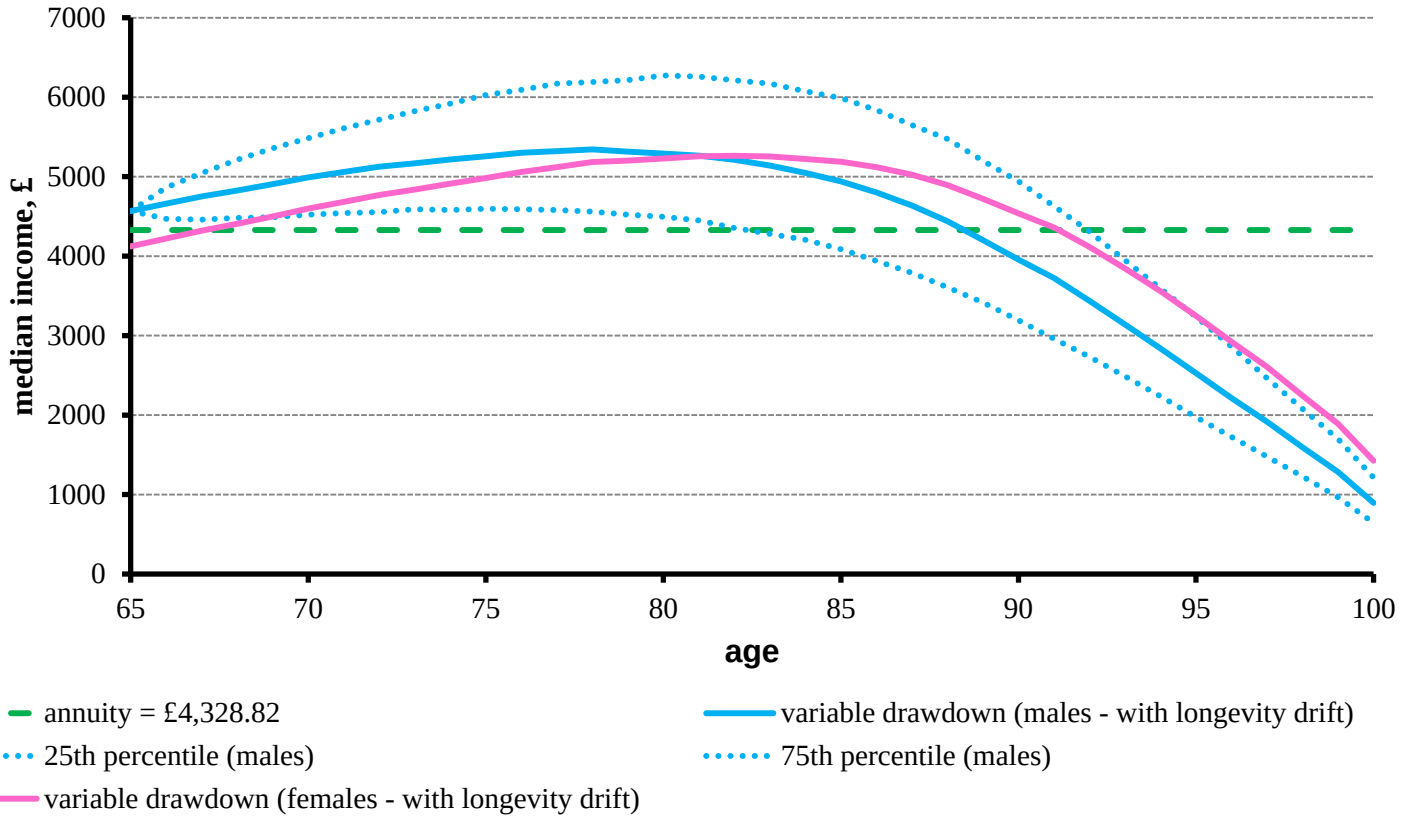
Fixed Income Drawdown – Different Amounts



Bequeathable Wealth

- On death, a person may want to leave some wealth to bequeath
- A consideration on how fast income can be drawn down is thus how likely it is that they will leave no money when they die
- While this is similar to the consideration of running out of money, it does change the dynamic slightly

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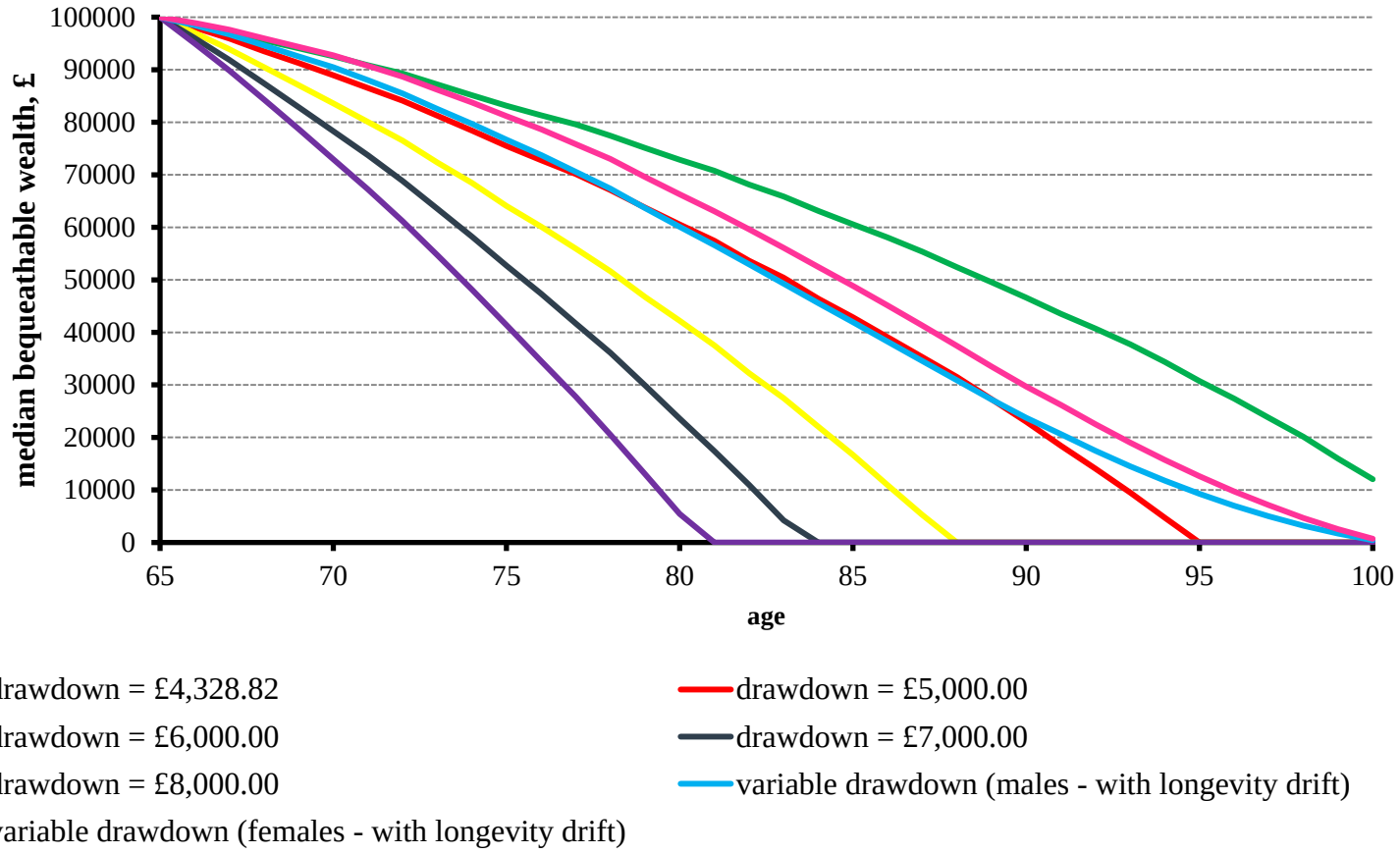
Bequeathable Wealth



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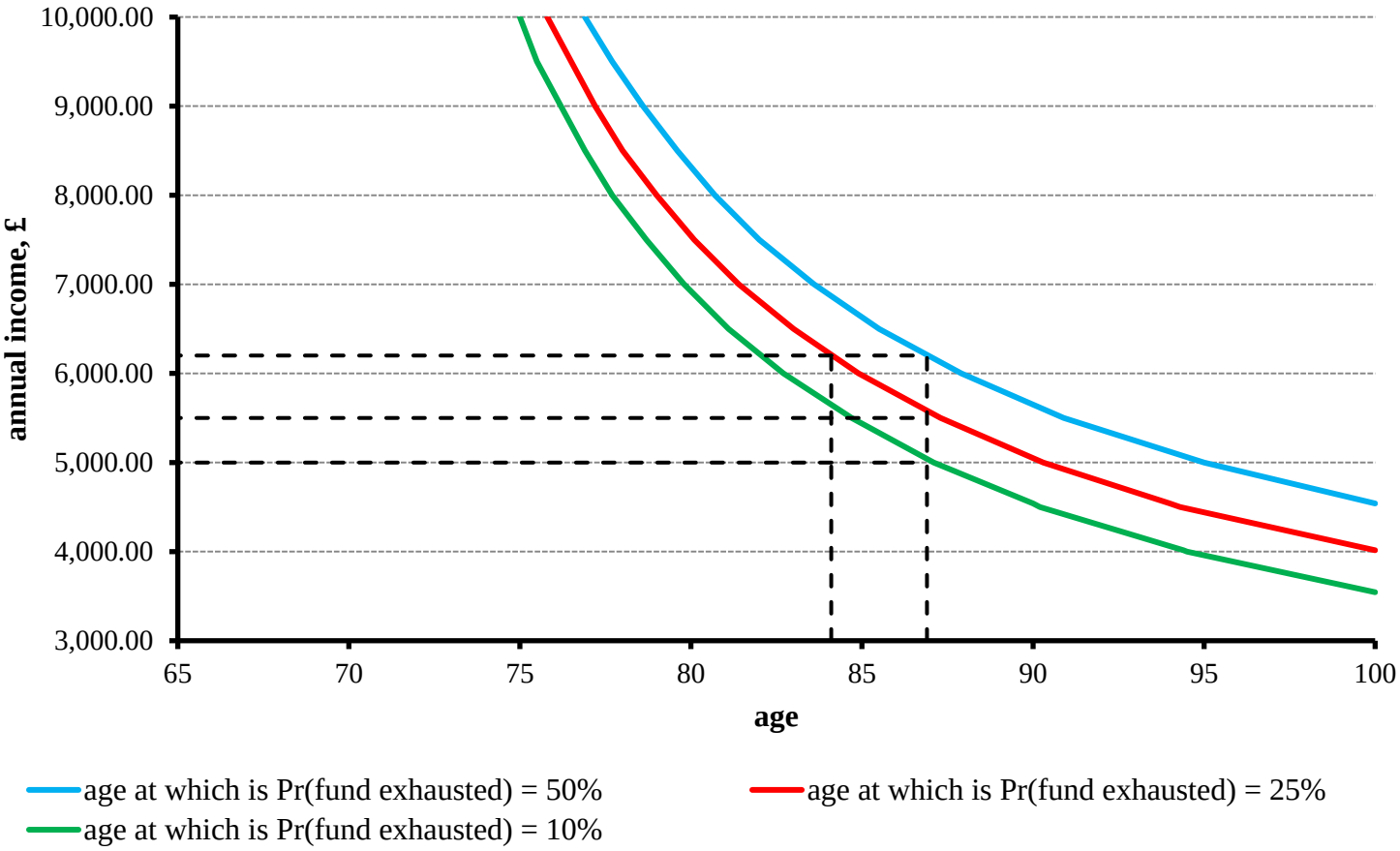

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Gifting Wealth

- It may be more appropriate for people to gift money at the start of their retirement rather than waiting until they die
- For example, helping their sons and daughters onto the housing ladder in the United Kingdom
- The risk is that if we give away too much money at the start then we may run out of funds while we are still alive

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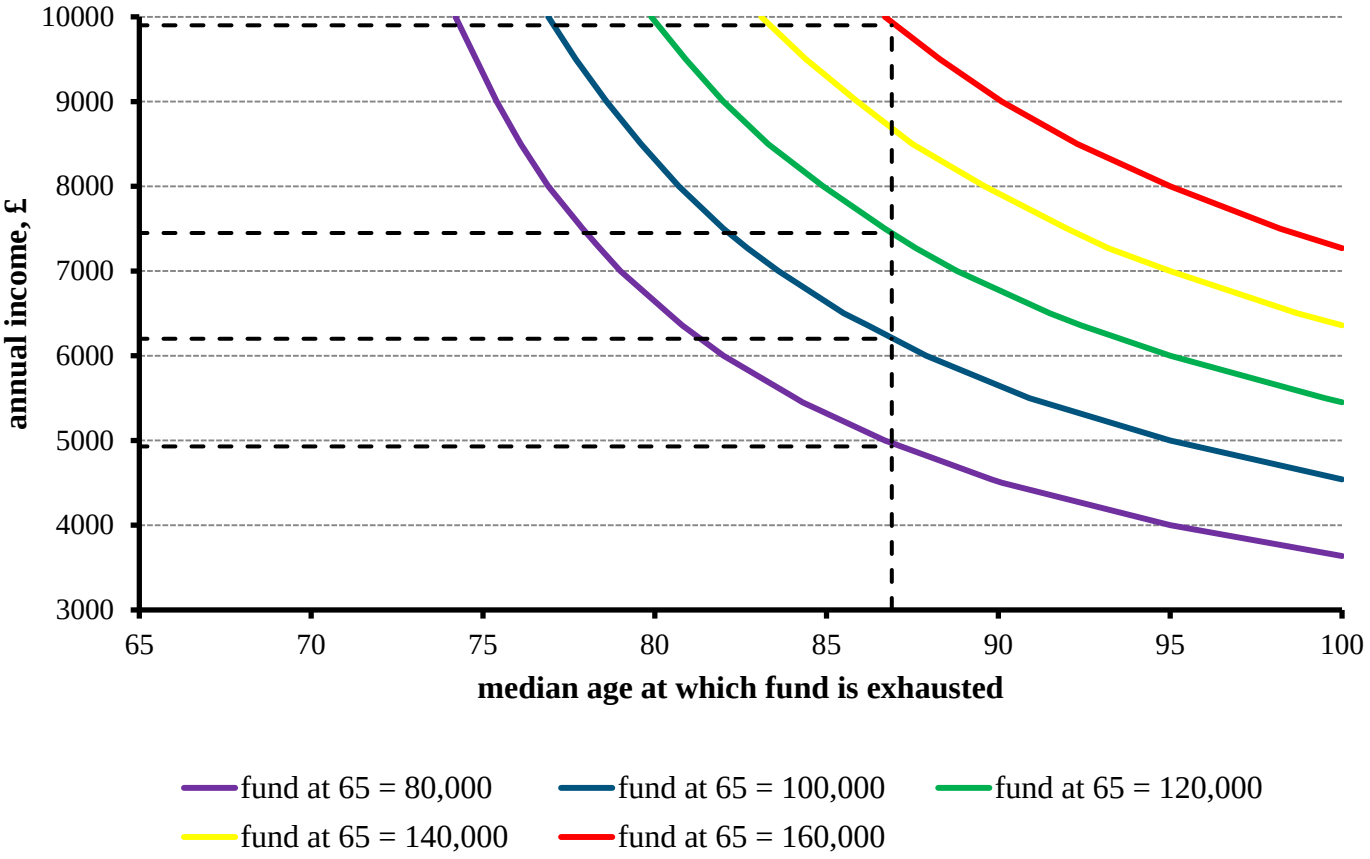
Gifting Wealth



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Home ownership

- For the United Kingdom, many people entering retirement own their homes and depending upon where they live they can be highly valuable assets

- Home owners therefore can see their house as an insurance policy against their pot running out and hence can take larger risks either investment and/or annual income taken

- Money can be released from the home through
  - Equity Release
  - Downsizing

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State Pension

- Not only is the regulation surrounding private pensions changing but so too is state pensions and other state support

- Partly due to political pressure the United Kingdom's state pension is moving towards an amount that should support most people in retirement, certainly in collaboration with other state aid

- Assuming that these trends continue the risk of losing all your pension income, particularly at an old age, is not as great as it may first appear

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Long-term care

- Another factor that needs considering when planning on income draw down in retirement is the need and cost of long-term care
- Currently around 20% of the population enters long-term care in retirement and the government will expect a contribution from those who have assets
- Due to the cost of long-term care, most pension pots and housing wealth will be severely drained if a person goes into care whilst for those with no assets the government will pay
- Again, this may focus people's attention on making their pot last into their mid 80's rather than for their whole lifetime

Possible changes going forward

- Due to regulation, longevity risk, interest rates and reputation for poor value it is likely that the annuity market will be severely reduced going forwards
  - New products that do not provide the full guarantees of annuities in terms of income for life but will manage the policyholder's income in a similar way to the income drawdown suggested. Income could be tailored to be higher earlier on and/or this will allow a more aggressive investment strategy to be followed
  - Government provides large pensions for say 85+ and allows insurance companies to design annuities that stop paying at 85 to remove longevity risk. These pensions could stop if person goes into government funded long-term care
  - Design new equity release products that are seen as part of retirement and long term care planning